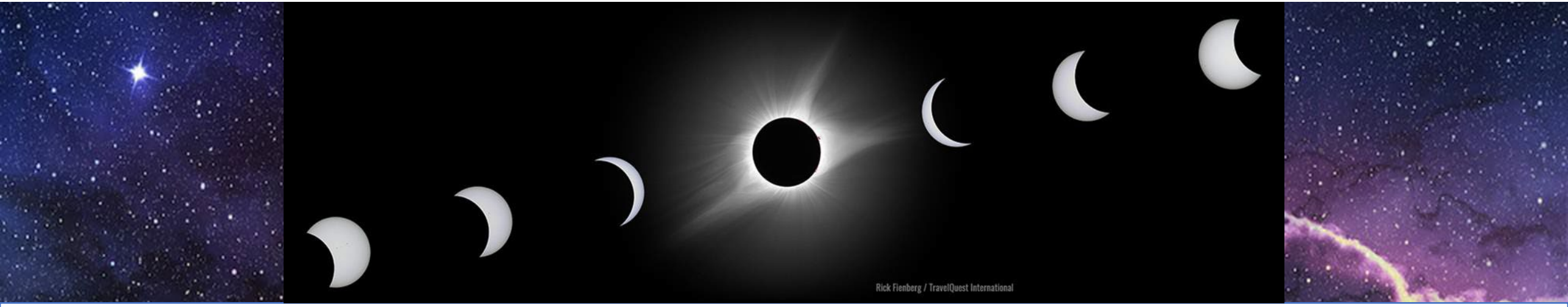
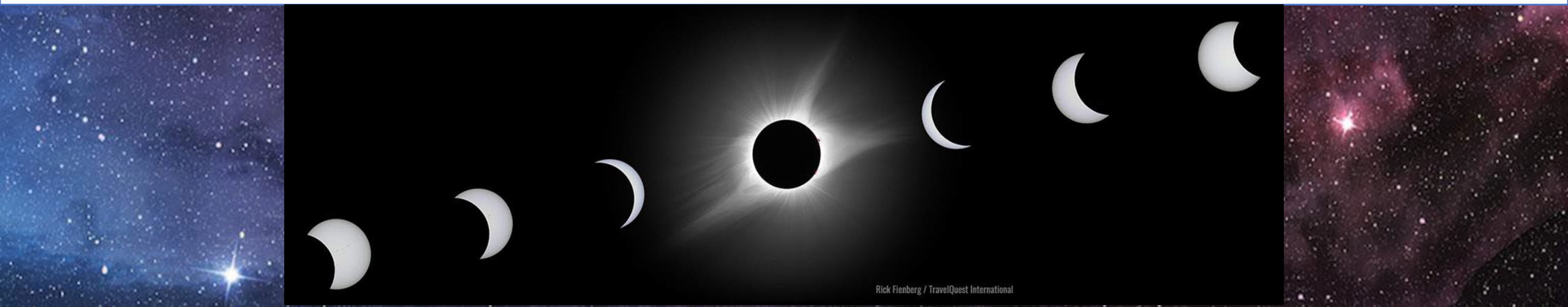
2024 TOTAL SOLAR ECLIPSE OVERVIEW

Mary Moran
Emergency Management and Preparedness Director
Indiana Department of Homeland Security



T-MINUS: 87 DAYS

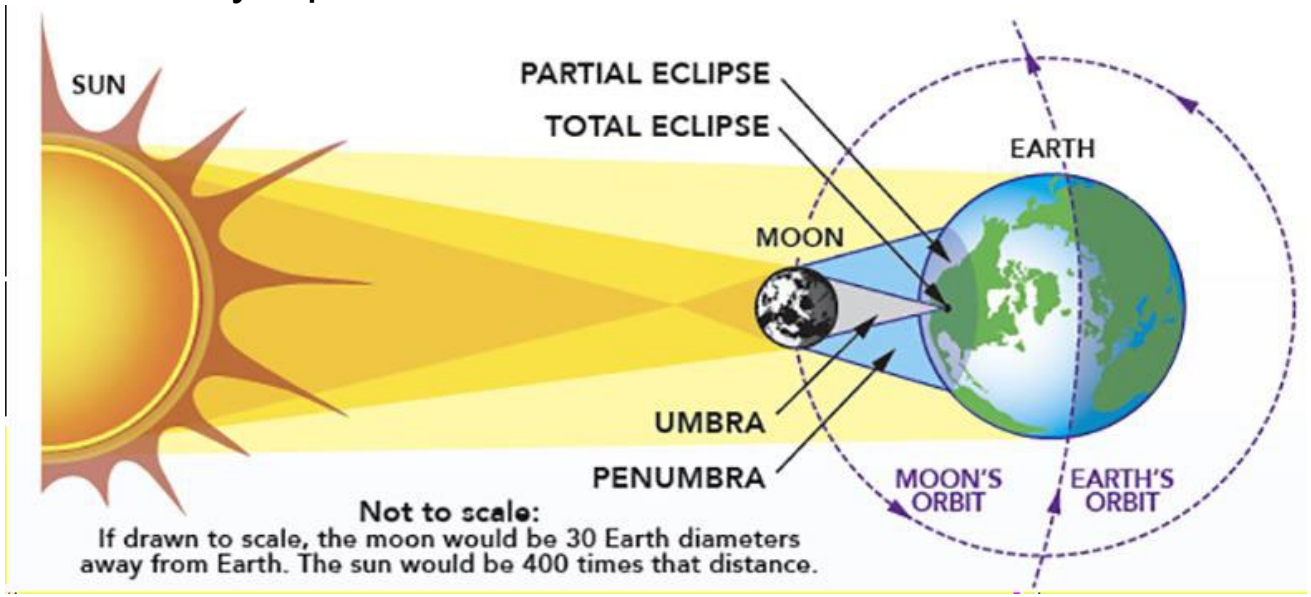
TOTAL SOLAR ECLIPSE | *April 8th, 2024*



WHAT IS A SOLAR ECLIPSE?

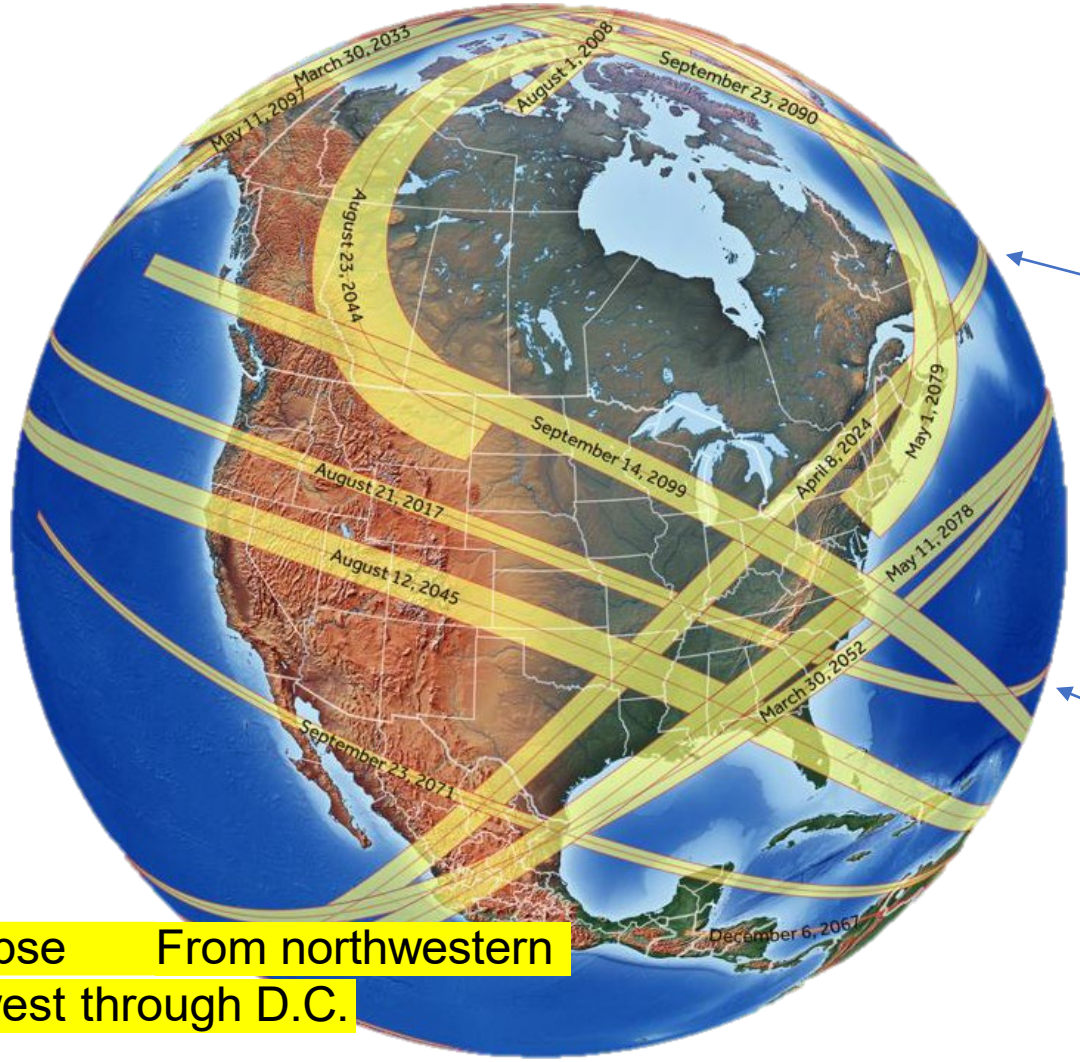
What is an eclipse? An eclipse occurs when the moon's orbit crosses in front of the sun, blocking all or part of the sun's rays from reaching the earth's surface. There are different types.

- **Total eclipse:** Moon completely blocks the sun, allowing the corona (the sun's "atmosphere") to be visible. This is the eclipse we will be viewing!
- **Annular eclipse:** Moon is at apogee (furthest point from the earth) and the sun isn't completely hidden. The sun looks like a thin ring around the moon.
- **Partial eclipse:** Moon blocks only a portion of the sun.



WHERE DO ECLIPSES OCCUR?

Total Solar Eclipses over North America in the 21st Century



2024 eclipse path

The last eclipse path (2017)

2099 (Sept. 14): Total Solar Eclipse From northwestern Canada through the upper Midwest through D.C.

WHAT TO EXPECT IN 2024

- During the partial phase, the sun gets “less blinding” but the sky doesn’t get appreciably dark until over 90% of the sun is covered.
- The effect is like cirrus clouds are over the sun.

Mark Meggs photos with a solar filter (2017).
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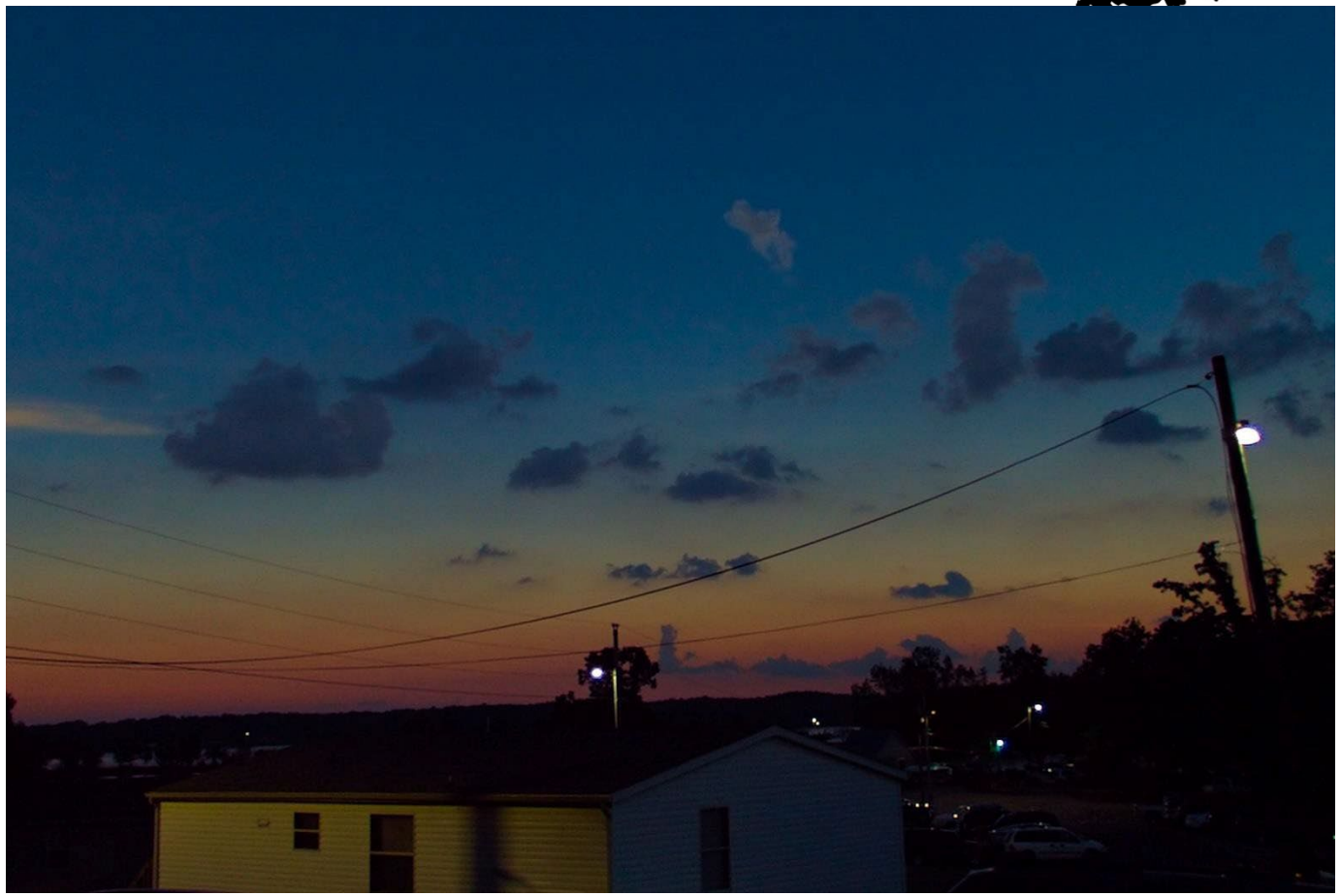
THE WEIRD SKY DURING TOTALITY

Twilight surrounds the observer as the sky is brighter along the horizon beyond the zone of totality 360° around. Bright stars and planets become visible. It's no wonder that nocturnal animals become active.



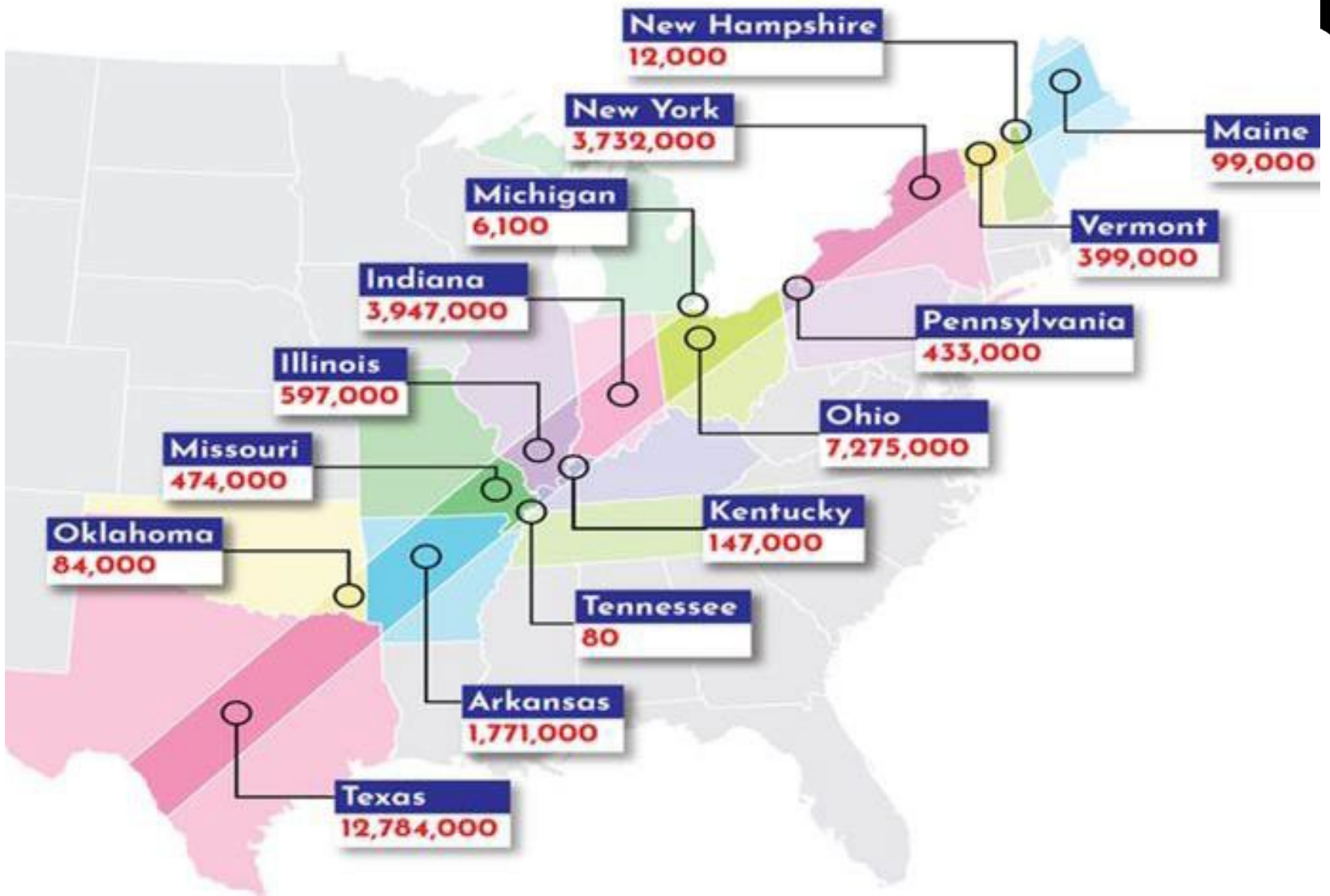
Tom Hayes photo (2017)/DNR

BEHAVIORAL CHANGES

Natural changes:

- Temperature fluctuations - dropping temperatures
- Animals, birds, etc. may become confused with the appearance of dusk settling in. They may come out to feed or return to their nests at an entirely different time than normal.
- Severe weather outbreaks – lack of safety shelters for mass populations

HOW MANY PEOPLE LIVE ON TOTALITY PATH?



Total Solar Eclipse
April 8, 2024

GreatAmericanEclipse.com

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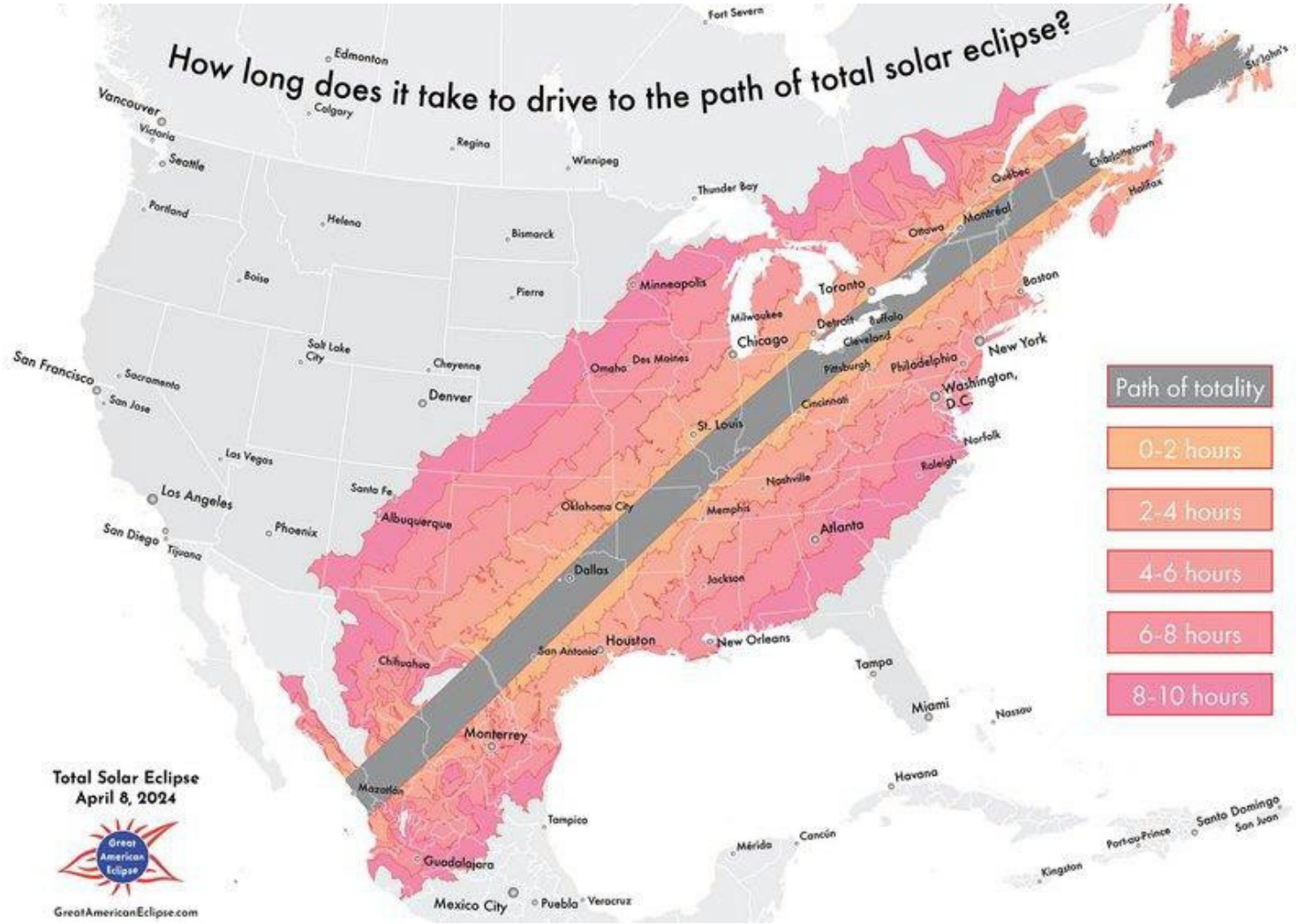
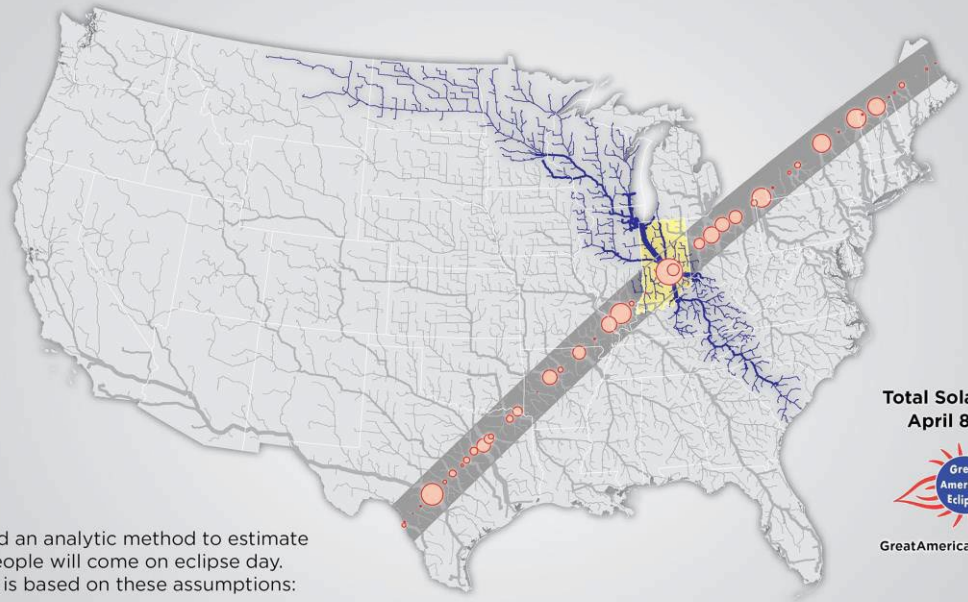
HOW LONG IT TAKES TO DRIVE TO TSE PATH?



HOW MANY GUESTS CAN WE EXPECT?

How many people will go see the Great American Eclipse in Indiana?

A total solar eclipse crosses North America on April 8, 2024. This is easily the most beautiful sight you will see in the sky! Try to arrive early and stay late to beat heavy traffic.



Total Solar Eclipse
April 8, 2024

Great American Eclipse

GreatAmericanEclipse.com

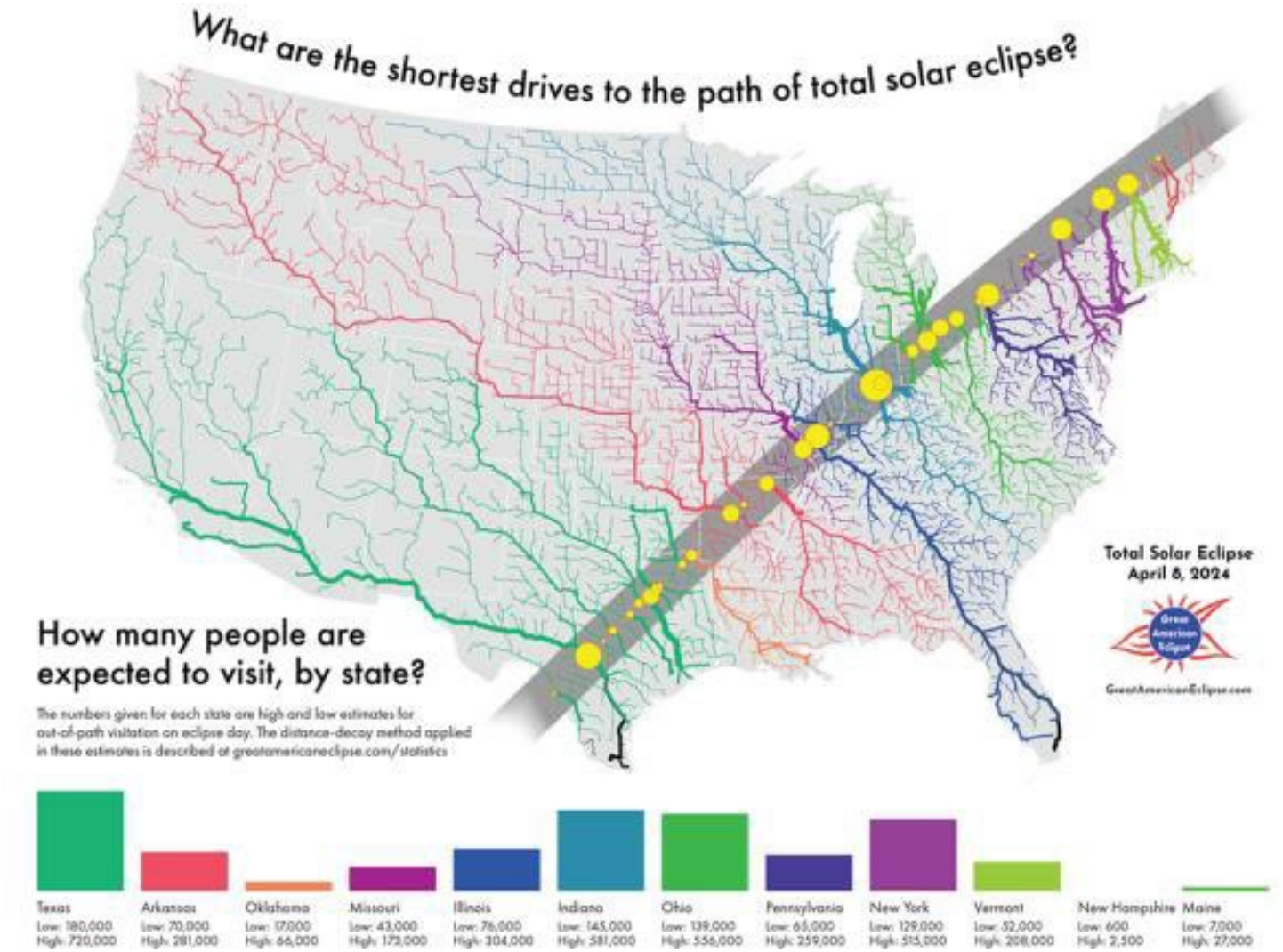
We've applied an analytic method to estimate how many people will come on eclipse day. The estimate is based on these assumptions:

- People nearby are more likely to drive to the path of total solar eclipse than people far away.
- People will take the shortest drive to the closest destination in the path of totality.

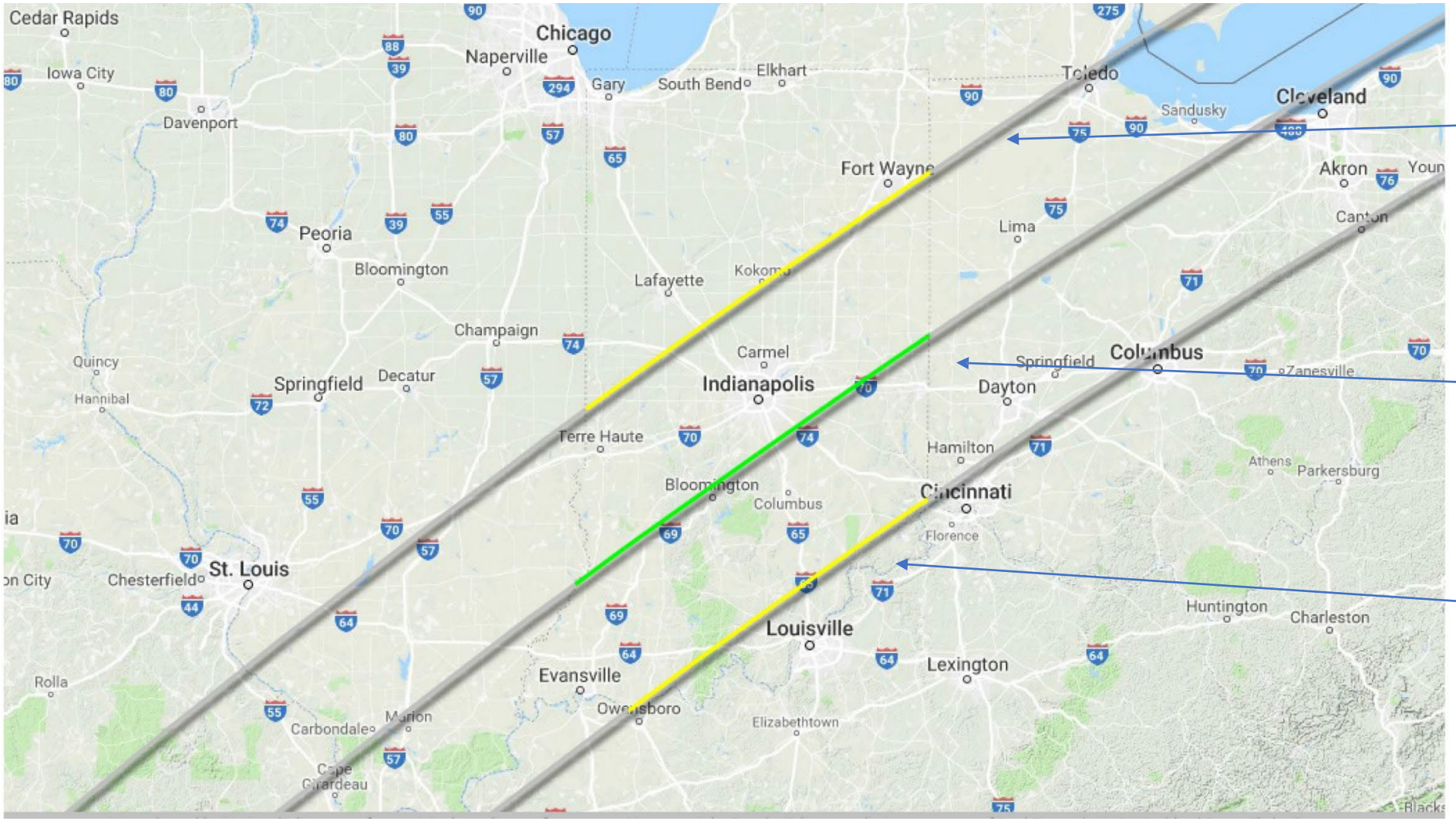
Learn about the details of our model at **greatamericaneclipse.com/statistics**

Low estimate of eclipse visitors to Indiana: 145,000
High estimate of eclipse visitors to Indiana: 581,000
People in Indiana living inside the path: 3,947,000

HOW MANY VISITORS ARE EXPECTED?



A CLOSER LOOK IN INDIANA



Northern Limit of Totality – shortest duration

Center line – maximum duration

Southern Limit of Totality – shortest duration

TOTAL SOLAR ECLIPSE OVER INDIANA

Total Solar Eclipse over Indiana

April 8, 2024

TIME OF TOTALITY

3:00:00 pm EDT

SPEED OF MOON'S SHADOW

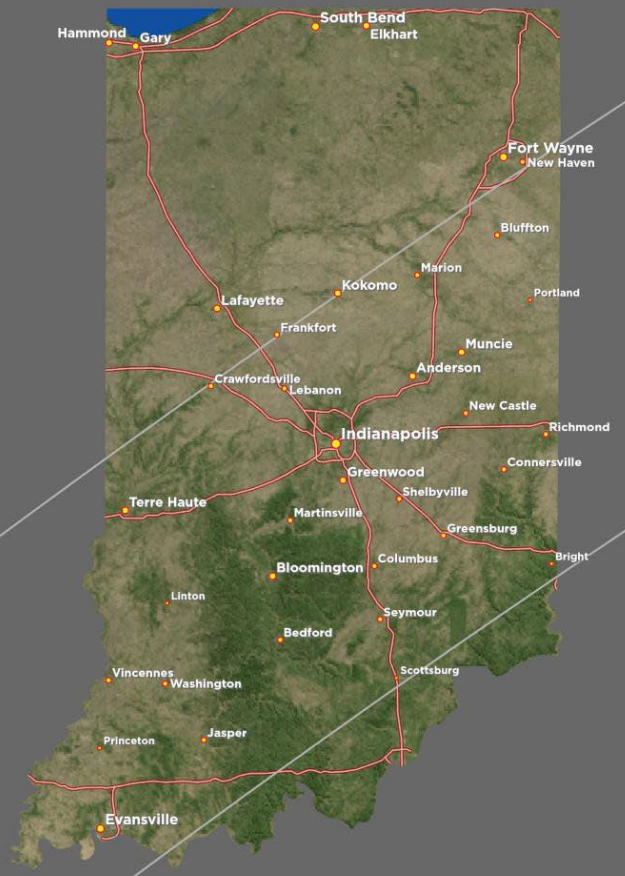
1,854 mph

MAXIMUM DURATION OF TOTALITY

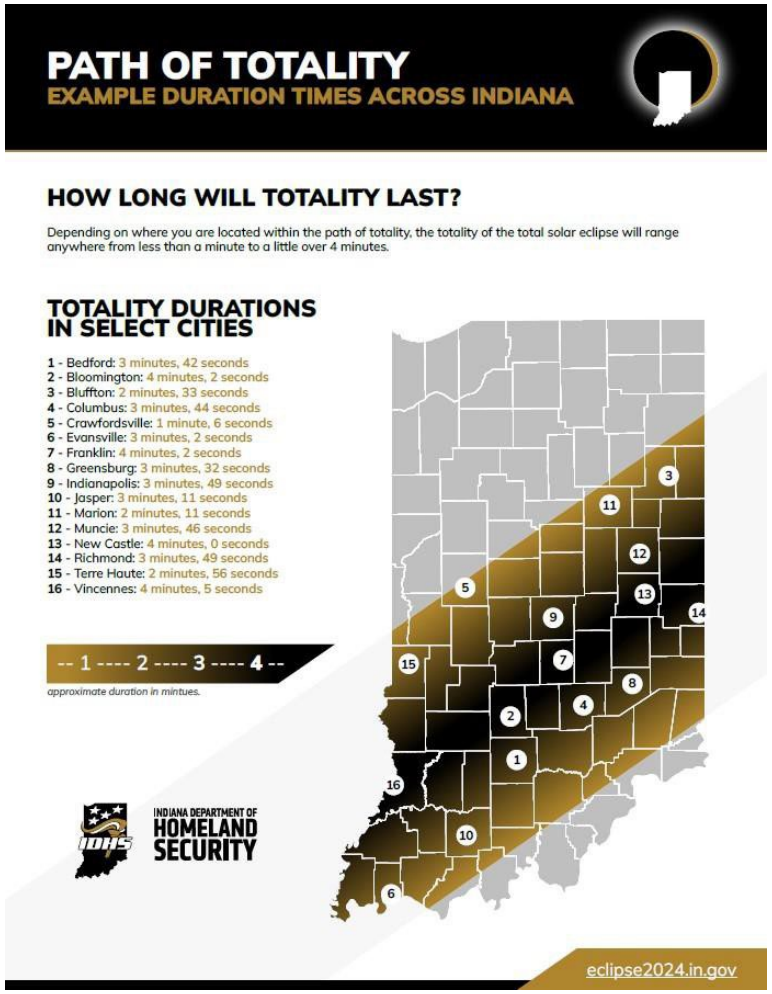
4 min 10 sec

Great American Eclipse

GREAT AMERICAN ECLIPSE.COM



TSE PLANNING CONSIDERATIONS



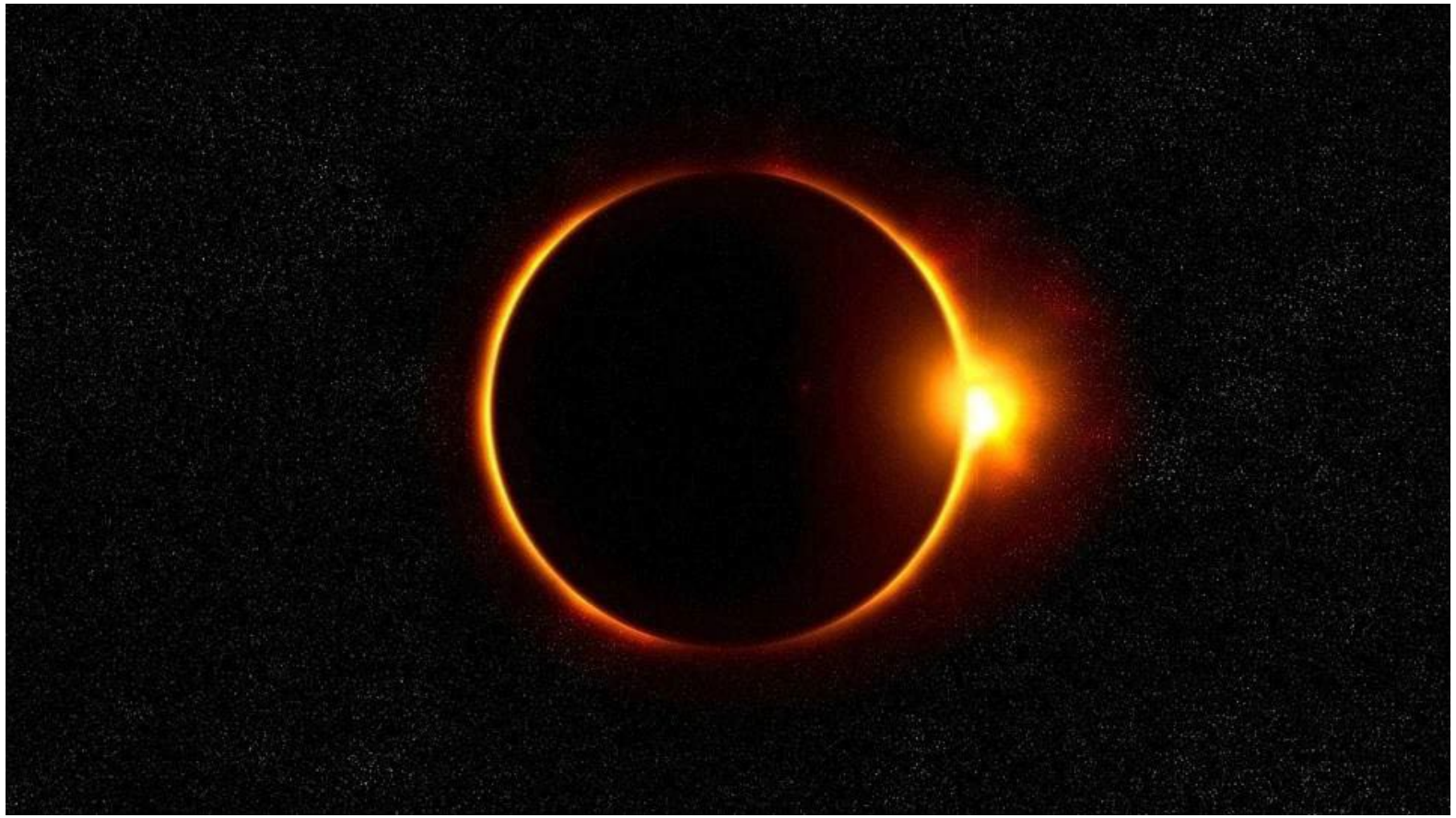
Counties on Center Line of Totality (West to East):

- 12 counties

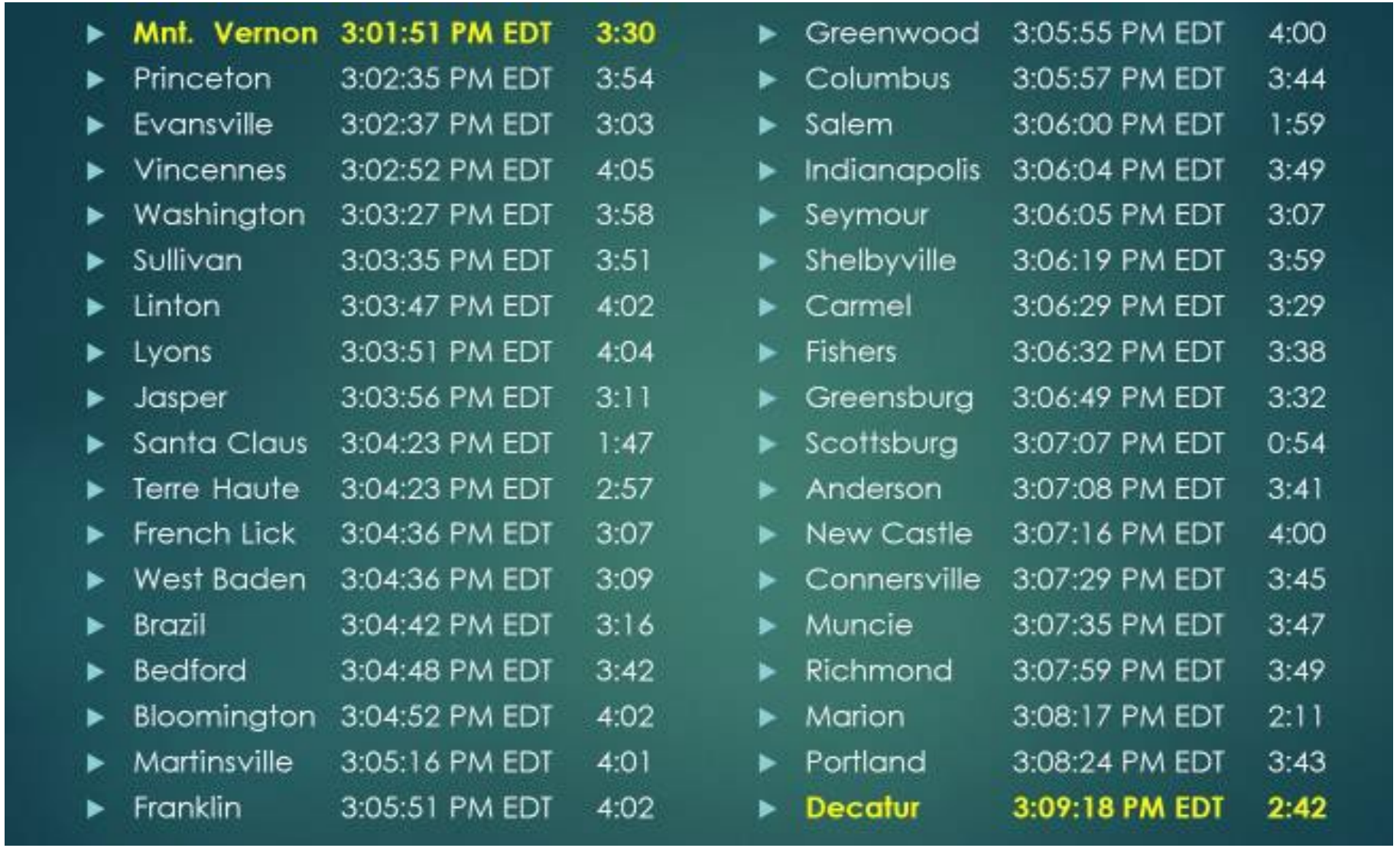
•Knox, Greene, Monroe, Brown, Morgan, Johnson, Shelby, Hancock, Rush, Henry, Wayne, Randolph

- Experience longer duration of **total** eclipse
  - 3 minutes 50 seconds – 4 minutes +

HOW LONG INDIANA WILL BE IN THE DARK



START TIMES – END TIMES



Mnt. Vernon	3:01:51 PM EDT	3:30
Princeton	3:02:35 PM EDT	3:54
Evansville	3:02:37 PM EDT	3:03
Vincennes	3:02:52 PM EDT	4:05
Washington	3:03:27 PM EDT	3:58
Sullivan	3:03:35 PM EDT	3:51
Linton	3:03:47 PM EDT	4:02
Lyons	3:03:51 PM EDT	4:04
Jasper	3:03:56 PM EDT	3:11
Santa Claus	3:04:23 PM EDT	1:47
Terre Haute	3:04:23 PM EDT	2:57
French Lick	3:04:36 PM EDT	3:07
West Baden	3:04:36 PM EDT	3:09
Brazil	3:04:42 PM EDT	3:16
Bedford	3:04:48 PM EDT	3:42
Bloomington	3:04:52 PM EDT	4:02
Martinsville	3:05:16 PM EDT	4:01
Franklin	3:05:51 PM EDT	4:02
Greenwood	3:05:55 PM EDT	4:00
Columbus	3:05:57 PM EDT	3:44
Salem	3:06:00 PM EDT	1:59
Indianapolis	3:06:04 PM EDT	3:49
Seymour	3:06:05 PM EDT	3:07
Shelbyville	3:06:19 PM EDT	3:59
Carmel	3:06:29 PM EDT	3:29
Fishers	3:06:32 PM EDT	3:38
Greensburg	3:06:49 PM EDT	3:32
Scottsburg	3:07:07 PM EDT	0:54
Anderson	3:07:08 PM EDT	3:41
New Castle	3:07:16 PM EDT	4:00
Connersville	3:07:29 PM EDT	3:45
Muncie	3:07:35 PM EDT	3:47
Richmond	3:07:59 PM EDT	3:49
Marion	3:08:17 PM EDT	2:11
Portland	3:08:24 PM EDT	3:43
Decatur	3:09:18 PM EDT	2:42

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PUBLIC SAFETY TSE THREATS, PLANNING CONSIDERATIONS, LESSONS LEARNED

OVER 135 Participating Organizations

- 92 county emergency managers, first responders and hospitals
- Indiana Department of Natural Resources
- Indiana Department of Transportation
- Integrated Public Safety Commission
- Indiana Department of Education
- Indiana Association of County Commissioners
- Ivy Tech Community College
- Indiana Bureau of Motor Vehicles
- Indiana Department of Child Services
- Indiana Department of Correction
- Indiana Department of Environmental Management
- Indiana Department of Health
- Indiana National Guard
- Indiana Office of Energy Development
- Indiana Optometric Association
- Indiana University
- Indiana Volunteer Organizations Active in Disaster
- Visit Indiana
- National Weather Service

KEY AREAS OF PLANNING

- Although we all have experience with special events within our geographical areas of operation, this is a **regional, nearly statewide event.**
- Areas of special concern are going to be **crowd and traffic management.**
- **Weather** may play a role in crowd movement (makes true estimation of crowd size hard to plan for).
- Once the event is over, people want to go home… with or without extended community events, many people will hit the road immediately following the event.


FLORIDA

KEY LESSONS LEARNED FROM 2017 ECLIPSE

The millions of people drawn to locations along the eclipse path taxed limited transportation facilities, and traffic congestion was intense in many locations.

For example, travel from Casper, WY, to Denver, CO —normally a 4-hour trip— took 10 hours or more. Traffic congestion on rural interstate routes lasted for up to 13 hours after the eclipse.

Transportation professionals have been conducting special-event traffic planning and management for decades for athletic events. However, the 2017 total solar eclipse was unlike any other special event. At 5 million participants, it was likely the largest special event in U.S. history. **For comparison, 5 million people leaving the path of totality at one time is like 71 sellout football games ending at the same time.**

WEATHER CONSIDERATIONS

April is unpredictable when it comes to weather.

- **Severe weather** is possible, including tornados and severe thunderstorms.
- Lack of sizable shelters for severe weather around parks and large open spaces.
- Parking off pavement could impact people leaving due to soft ground.
- If it is cloudy or rainy in one region, traffic may increase toward others.
- Heavy rain, freezing rain or snow will slow traffic even more.
- Indiana has a 33% chance of clear days in April.

PRIMARY THREATS

- **Local populations**, especially in large totality strip, could increase significantly.
- **Extreme traffic congestion** will stress local infrastructure.
- **Increased 911 calls** due to individuals unaware of the eclipse.
- **Increased boat and water accidents** due to eclipse viewing on water bodies.
- **Increased car accidents** due to eclipse viewing while driving.
- **Extreme demand for** hotels, campsites, restaurants, entertainment facilities, parks, etc.
- **Severe weather** is possible in April

PRIMARY THREATS

- **Mass gatherings** could lead to attacks, crowd control, fights, overdoses and other cascading effects.
- The potential for **major disruptions** and life-threatening accidents within the roadways and viewing sites.
- Emergency responders will need **ingress and egress** options to allow for response needs. Those will be difficult in most areas especially roadways without shoulders.
- **Disrupted emergency service vehicle** responses and lack of ambulances.
- **Airspace issues** due to increase of drone and private aircraft usage.
- **Communication disruptions (first responders & citizen cell phones)** due to high data and communication network use


2017 Solar
Eclipse
"Aftermath"
(Chicago Tribune)

CASCADING EFFECTS

- **Frustrated viewers/road rage** due to extreme traffic congestion
- **Vehicles running out of gas** (2017 Solar Eclipse - Red Cross spent hours running from gas stations to vehicles blocking traffic due to empty tanks)
- **Fuel shortages at gas stations**
- **Traffic gridlock** on both main roads and rural roads (w/no shoulders for first responders)
- **Family/children separated** at a large gathering due to new area/distractions /predators. First responders need a reunification location & plan
- **Communication disruptions (first responders & citizen cell phones)** due to high data and communication network use

CASCADING EFFECTS

- **Health-related issues** (sun blindness, medical needs, etc.)
- **Onset of effects of eye damage** occurs 12-24 hours afterwards potentially while people are driving home
- **Small communities** may not have the resources available to feed and fuel larger than expected visitors – even if the community is outside the zone of totality.
- **Adverse Weather** issues
- **Lack of enough restroom facilities** on gridlocked roadways
- **Restaurant/fast food lines/overwhelmed/lack of staff**
- **Lack of power for electric vehicles**

DNR PROPERTIES IN PATH OF TOTALITY

HEALTH PLANNING PARTNERSHIPS

- Local Health Departments (LHDs)
- Hospitals
- Emergency Medical Services (EMS)
- Healthcare Coalitions (HCCs)
- Community Mental Health Centers

HEALTH & MASS CARE CASCADING EFFECTS

- **Health-related issues** (sun blindness, medical needs, etc.)
- **Onset of effects of eye damage** occurs 12-24 hours afterwards potentially while people are driving home
- **Small communities** may not have the resources available to feed and fuel larger than expected visitors – even if the community is outside the zone of totality.
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- **Lack of enough restroom facilities** on gridlocked roadways
- **Restaurant/fast food lines/overwhelmed/lack of staff**

HEALTH & MASS CARE CASCADING EFFECTS

- **Healthcare surge and EMS service disruptions**
- **Traffic congestion for ambulances**, employees and volunteers
- **Consideration for scheduling/postponing elective procedures & dialysis appointments**
- **Increased boating/motor vehicle accidents**
- **Food inspections** – increased temporary food vendors
- **Temporary** campgrounds/open-field parking
- **Environmental** water/sewer assessments
- **Individual Preparedness** – Properly dressed for weather, stay hydrated and safe

SCHOOL CONSIDERATIONS & RISKS

- **Parents may be stuck in traffic** unable to pick up their child(ren) during the eclipse hours or may be unable to get home to their children (just off the bus/home alone)
- **Teachers/administrators/staff departure** during the eclipse
- **Depletion of the area's gasoline supply** for buses several days after the eclipse
- **E-learning, spring break, teacher's in-service day, or a day off**
- **Recommend not taking unnecessary risks** and to err on the side of caution

SCHOOL CONSIDERATIONS & RISKS

- **Unsafe or unsupervised** viewing of the sun
- **Increased safety concerns for walkers and drivers** (teens included)
- **Buses could be stuck in traffic** for long periods of time (in towns and rural areas)
- **Distracted drivers** behind buses or while students are crossing streets
- **Students exiting buses** from the onset of the eclipse throughout the entire eclipse (approx. 130 – 430 depending on your location in Indiana)

EYE SAFETY – CRITICAL MESSAGING

Eye safety

- Avoid counterfeit glasses – utilize glasses from the website https://eclipse.aas.org/resources/solar-filters
- "Recognized by the American Astronomical Society's Solar Eclipse Task Force as a supplier of safe solar viewers/filters,"

- Per AAS website, in the weeks leading up to the August 2017 U.S. solar eclipse, such sites (as Amazon, eBay or other online marketplaces), hosted numerous sellers of eclipse glasses and other solar viewers that had not been properly tested and shown to be safe.

MENTAL HEALTH-RELATED CONSIDERATIONS

- **Mental Health**
  - IN District Resilience & Emotional Support Teams (REST)
    - provide resources and deliver psychological support to individuals impacted by a crisis incident or event. REST primarily provides psychological first-aid, responder resilience training and support, and referral to individuals for local resources for psychosocial needs.
  - **988 Suicide and Crisis Lifeline**
- **Potential for increased occurrence of overdose**
  - **Narcan availability** – immediate access concerns

POSITIVES

- **Extremely rare event** for Indiana
- **Lifetime experience**
- **Educational opportunities** – maximize educational impact
- **Collaborative planning** among partners
- **Local income generation** – tourism dollars
- Lodging
- Restaurants
- Convenient stores/gas stations
- Entertainment
- State parks
- Food vendors
- Other vendors – restrooms, security
- **Identification of gaps during planning/exercise efforts**

MESSAGING

1. “Arrive early. Stay put. Leave late.”

2. “Plan to have a good time watching the eclipse. Plan ahead.”

3. “This isn’t a game day. Treat the eclipse as a three-day event, not a three-hour event.